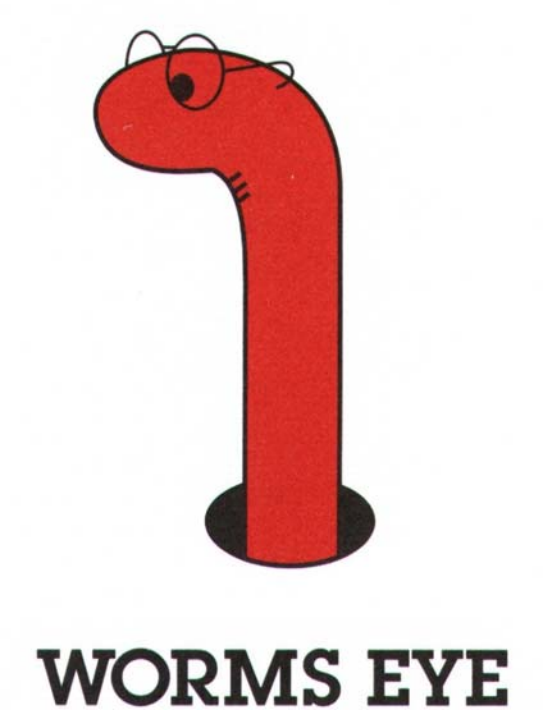
Electronic Report



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Our Ref: Roundthorn Road/M24 1FT/2018
Date: 9 March 2021

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RAMSDEN FARM, ROUNDTHORN ROAD, MIDDLETON, MANCHESTER, M24 1FT

Validation Report

INTRODUCTION

A residential development is nearing completion and instructions were to prepare a validation report.

PREVIOUS REPORTS

- Preliminary Risk Assessment (PRA) 19th September 2019.
- Exploratory Intrusive Report 12th June 2019.
- Soil Contamination Report 11th September 2019.
- Landfill/Ground Gas Report 23rd June 2020

PROPOSED DEVELOPMENT

The development comprises four houses (Plots 1 to 4) with associated roadway, gardens, driveways and garages.

SITE LOCATION

The site is almost horn shaped with a main part about 150 x 90 metres narrowing to the south, located to the north of Roundthorn Road in Middleton and at OS Grid Reference 387650, 405370.

SITE INSPECTION

The site was inspected on 1/3/21 by Mr M Whitaker. This showed that plots 3 and 4 were finished, plot 2 is almost complete and plot 1 has the roof, several windows, and external walls in place with hardcore stored at the front of plot 1.

The gardens and landscaping had been completed up to just below ground level, ready to be turfed, following removal of hardcore from the front of plot 1. Groundworks to all plots, have been completed (excluding turf) and photographs are enclosed.

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PREVIOUS REPORT SUMMARY

Contamination

Contamination tests mostly show levels below thresholds appropriate for the development, suggesting no risk to householders on plot 1 and 2. However, raised levels of lead and DbA in THA, and pesticides in THA and TH K4 at 0.3 metres, suggest a risk to householders in the rear garden to plot 4, moving southwest towards plot 3. Remedial works are required to the rear (northwest) of plot 4.

The findings suggest sulphate resistant concrete is not required.

There are no risks from hydrocarbon vapours.

High specification, coated, drinking water pipes are required on the southwest leg of the site. However, the findings also suggest subject to approval the middle and northeast of site is suitable for the use of normal PE waters.

Landfill/Ground Gas

The landfill/ground gas report concludes:

Gas test results show worst case methane 8.5% and carbon dioxide 11.3% in Pr 1 (Plot 4) with levels in Pr 2, 3 and 4 (Plots 1, 2 and 3) showing worst case levels 0.1% methane, 2.7% carbon dioxide and 15.0% oxygen. There was no detectable outflow in any monitor.

Intrusive Report Re-Cap Continued

Trial holes show limited made ground, with THA indicating possible localised pockets on the northeast side. This is consistent with raised gases seen on Plot 4 and normal levels on Plots 1, 2 and 3. Although this suggests a localised rick to Plot 4, the spacing, and location, of wells is such that it is not possible to conclude there is no spread to Plot 3. However, the results from Pr 2, 3 and 4, which show near normal levels, suggest no spread of gases to Plots 1 and 2.

Bearing in mind gas outflow, and GSV levels, it is considered the findings show a low risk to Plot4, and a very low risk to Plots 1, 2 and 3. Levels of methane and carbon dioxide on Plot 4 are significantly elevated and suggest it is appropriate to raise the classification to a gas situation 2 and adjacent Plot 3 as a precaution, with Plots 1 and 2 classed as a gas situation 1.

End of Intrusive Report Re-Cap

REMEDIAL WORKS

Garden/Landscaped Areas – Plots 3 and 4

Raised levels of lead and DbA were seen in THA, with raised levels of pesticides in THA and THK4 at 0.3 metres. These are to the rear (northwest) of Plot 4 and heading southwest towards Plot 3.

One solution is to remove the source by excavating the contaminated material and disposing off site.

No remedial works were required to plots 1 and 2.

Action

Contaminated soils were removed from plot 4, and made ground removed from plot 3. Photographs of the site strip, and a letter from the groundwork supervisor are enclosed.

The site was inspected by GHG Consulting Ltd on 12/12/19. Made ground from plot 3 and 4 had been excavated and removed to a stockpile, off-site, for future disposal. The GHG report is enclosed.

Conclusion – contaminated soils were only seen on plot 4. However, as a precaution, made ground was also excavated from plot 3. Contaminated and potentially contaminated soils were satisfactorily removed from plots 3 and 4.

Imported Soils - Required

All soils (e.g. topsoil, bulk fill hardcore) and similar materials imported on-site to be proved to be uncontaminated. Tests should be screed against residential values, based on 1% SOM. If these are exceeded, site specific value may be derived, subject to them being appropriate.

Action

No soils have been imported on to site.

Excavated sand and topsoil from plots 1 and 2, shown to be uncontaminated in the exploratory investigation, was excavated and stockpiled for re-use. The stockpiles were inspected, and tested, by GHG Consulting Ltd on 12/12/19. The test results have been compared with residential thresholds which shows low levels of contaminants, below residential thresholds and suitable for use in gardens. The GHG report is enclosed.

The site was inspected on 1/3/21 by Worms Eye which showed gardens and landscaping to all four plots was at ground level. Excavations on plots 3 and 4, have been completed with excavated soils from plots 1 and 2, previously tested to show they were suitable for a residential site. Photographs of the plots from 1/3/21 are enclosed.

Conclusion – The gardens/landscaping on plot 3 and 4 have been suitably backfilled with soils from plots 1 and 2, previously tested to show they are suitable for use on residential sites.

Service Pipes - Required

To avoid hydrocarbons seeping into drinking water pipes, high specification coated pipes to Water Company approval (e.g. Protectaline barrier pipe A) are required on the southwest leg of the site (southwest of THI).

Action

Protectaline Barrier Pipe has been laid by SRM utilities, and a letter is enclosed to confirm this.

Conclusion – to prevent hydrocarbons seeping in to drinking water pipes, an appropriate barrier pipe has been laid.

Landfill/Ground Gases - Required

Test results show a Characteristic Situation 2 is appropriate for Pots 3 and 4, and the following are considered suitable based on the results:

- Ventilation of confined spaces within building.
- A suspended ground floor with ventilated underfloor void >150 mm.
- A low-permeability gas membrane (see membranes below).
- Minimum penetration of ground slab by services.
- Also gas precautions should continue across the cavity.

The installed membrane will need to be independently inspected before any follow on work.

No protection measures were required to plots 1 and 2.

Action

Gas protection measures have been installed on Plots 3 and 4 which is appropriate for a Characteristic Situation 1/Amber 1. These were independently inspected by E3P who confirm:

- *The membrane was intact with no holes or rips.*
- *The membrane was overlapped and is double taped to external and internal gas resistant DPM, using a double-sided jointing tape.*
- *All overlaps were additionally taped using foil backed girth tape.*
- *Top-hats have been adequately sealed against the membrane.*

The E3P report is enclosed.

Conclusion – gas protection measures to Plot 3 and 4 have been installed with gas protection measures in accordance with Characteristic Situation 2 / Amber 1 to an acceptable level of workmanship.

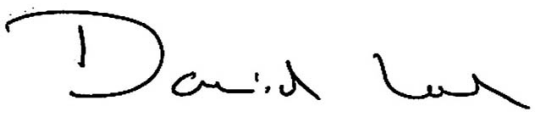
Conclusion

Validation work shows:

- Contaminated soils have been excavated from Plot 4 and, as a precaution, made ground has been excavated from Plot 3.
- Gardens to plots 3 and 4 have all been backfilled with soils from plots 1 and 2 which were tested to show they are suitable for use on residential sites.
- Gas protection measures have been satisfactorily installed and inspected.
- Protectaline Barrier Pipe has been used.

It is considered the site has been suitably remediated and developed such that there are no risks to householders.

Yours faithfully
on behalf of Worms Eye Ltd



David Lord
BSc (Hons)
FGS, MIEnvSc, AIEMA

RAMSDEN FARM, ROUNDTHORN ROAD, MIDDLETON, MANCHESTER, M24 1FT

List of Appendices – Validation Report

List of Acronyms

Proposed site plan

Photographs of Site Strip

Photograph Showing 600mm deep excavation to Plot 4

Letter from Groundwork Supervisor (Andrew Travis)

GHG Report on Inspection of Stockpiles for Re-use

SRM Letter on Water Pipes

Receipt for Protectaline Barrier Pipe

E3P Gas Membrane Inspection Report

Worms Eye Inspection – 1/3/21
- **General Photograph**
- **Plot 1**
- **Plot 2**
- **Plot 3**
- **Plot 4**

CONTAMINATION TEST UNITS

Conversion factor	Name	Symbol	Numerical Value	Alternative description	Commonly used for:
	per cent	%	1 in 100 (10^2)		total sulphur, hazardous waste
% x10	parts per thousand	‰	1 in 1000 (10^3)	g/l (grams per litre)	water soluble sulphate test
‰ x 1,000	parts per million	ppm	1 in 1,000,000 (10^6)	mg/kg (milligrams per kilogram)	most soil tests
				mg/l (milligrams per litre)	water tests
ppm x 1,000	parts per billion	ppb	1 in 1,000,000,000 (10^9)	μg/kg (micrograms per kilogram)	PAH soil tests
				μg/l (micrograms per litre)	water/leachate tests
ppb x 1,000	parts per trillion	ppt	1 in 1,000,000,000,000 (10^{12})	ng/kg (nanograms per kilogram)	PAH soil tests
				ng/l (nanograms per litre)	water/leachate tests

ABBREVIATIONS

Chemical	BAP	Benzo(a)pyrene
	BTEX	Benzene, toluene, ethylbenzene, xylene
	DAHA	Dibenzo(ah)anthracene
	MTBE	Methyl tertiaryt-butyl ether (additive to petrol)
	EPH	Extractable petroleum hydrocarbons (formerly diesel range organics – DRO)
	NFD	No fibres detected (asbestos test)
	PAH	Polycyclic aromatic hydrocarbons
	PCB	Polychlorinated biphenyls
	PCE	Perchloroethylene or tetrachloroethylene
	PID	Photo ionisation detector (screen for VOC)
	PRO/GRO	Petrol range organics/gasoline range organics
	SVOC	Semi-volatile organic compounds
	TCE	Trichloroethylene
	TPH	Total petroleum hydrocarbons
	VOC	Volatile organic compounds
Other	AGS	Association of Geotechnical Specialists
	BGS	British Geological Survey
	BRE	Building Research Establishment
	CBR	California Bearing Ratio
	CIEH	Chartered Institute of Environmental Health
	CIRIA	Construction Industry Research and Information Association
	CLEA	Contaminated Land Exposure Assessment (Environment Agency/DEFRA)
	CLR 8	Contaminated Land Research Report 8 (Environment Agency/DEFRA)
	DWQ	Drinking water quality
	EA	Environment Agency
	EQS	Environmental quality standards (for rivers etc.)
	ICRCL	Inter-departmental Commission for the Reclamation of Contaminated Land
	LQM	Land Quality Management Ltd (Land and Environmental Consultancy).
	NHBC	National House Builders Council
	SGV	Soil Guideline Values
	SPT	Standard penetration test

TPHWG TPH Working Group

1. This report should be considered in relation to the objectives agreed between Worms Eye and the Client, outlined in the introduction.

2. For the work, reliance has been placed on publicly available data, obtained from the sources identified in the report. The information is not exhaustive and further information may be available from other sources. When using the information it has been assumed it is correct, and no attempt has been made to verify the information.

3. This report has been produced in accordance with current UK policy and guidelines, for land and groundwater contamination, enforced by the Local Authority and the Environment Agency.

4. During the site walkover, reasonable effort was made to obtain an overview of the site. However, no attempt was made to enter areas that are unsafe, a risk to health and safety, locked, barricaded, overgrown, or areas not made accessible.

5. Access, the presence of services and activities on the site, limited locations where sampling could be carried out and the techniques that could be used.

6. Assessments are based on available information at the time of writing and are ultimately for the decision of the regulatory authorities.

7. The conclusions and recommendations provide an overview and guidance only and should not be specifically relied upon without considering the context of the report in full.

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9. New information, revised practices, or changes in legislation, may necessitate the re-interpretation of the report, in whole or in part.









PLOT 1: THE ASHFORD	0.3 ACRES
PLOT 2: THE BEECHFIELD	0.25 ACRES
PLOT 3: THE OAKWOOD	0.25 ACRES
PLOT 4: THE ROWAN	0.3 ACRES
ACCESS ROAD	0.25 ACRES
TOTAL SITE AREA	1.35 ACRES (0.54 HA)



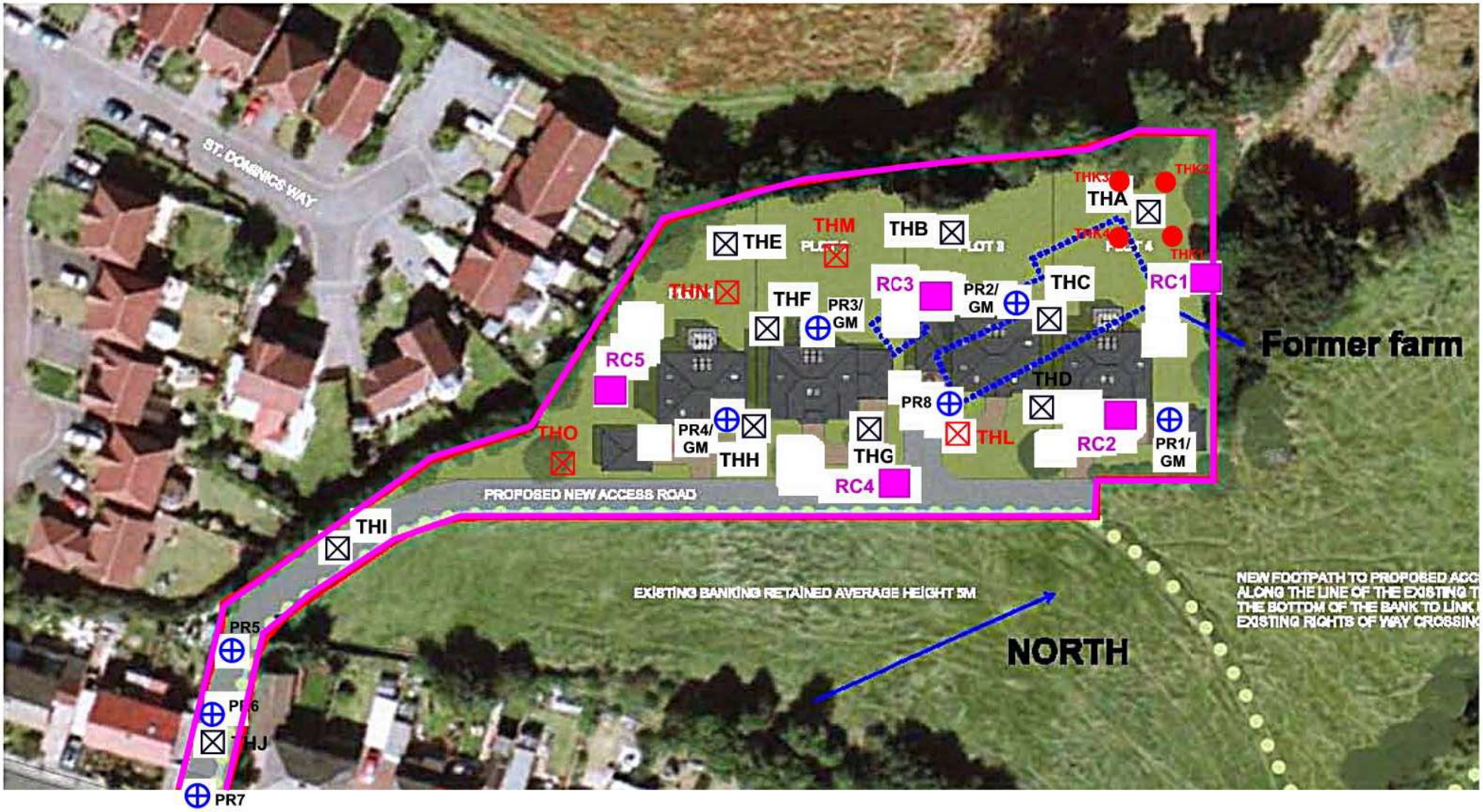
RAMSDEN FARM PROPOSALS: SITE PLAN 1:200 @ A1

PROPOSED SITE LAYOUT

CLIENT
PROJECT
DRAWING

DATE SCALE DWG. NO:

Watergrove CGI
architectural visuals
07904971504
3d@watergrove.co.uk
www.3d@watergrove.co.uk



Roundthorn Road, Middleton, Manchester. M24 1FT

Trialhole Extra Trialhole 2019 Probe Rotary

RAMSDEN FARM, ROUNDTHORN ROAD, MIDDLETON, MANCHESTER, M24 1FT
Photograph Showing Site Strip











RAMSDEN FARM, ROUNDTHORN ROAD, MIDDLETON, MANCHESTER, M24 1FT
Photograph Showing 600mm deep excvation



Tec Services (NW) Limited

The Offices Unit 3, Eagar Street
Newton Heath, Manchester, M40 1EP
Tel 0161 684 7718

24/02/202

I am Andrew Travis.

I have supervised the Groundworks at Ramsden Farm throughout the project.

Throughout the contract we followed the recommendations as outlined in the Worms Eye reports.

On both Plot 3 & 4 we excavated the soil to a depth of 600mm and deposited the soil in a heap for testing. The soil was found to be safe and no risk to Health and Safety, the reinstatement of the ground was carried out using a soil from another area which was low risk, this soil had also been tested and was found to be safe. The ground was reinstated with 450mm sub soil and 150mm top soil as outlined in the report.

We have attached a photograph of an excavated trail hole in order verify the reinstatement

Signed

Mr A D Travis

Graham Harwood – Director
Neil Johnson – Associate

Reference: 19-1129 Ramsden Farm - Stockpile Soils Assessment.doc.nfj

Friday, 03 January 2020

TEC Services Northwest Ltd

Eagar Street

Newton Heath

Manchester

M40 1EP

FAO Kevin Kelly

Re: Proposed Residential Development at Ramsden Farm, Roundthorn Road, Middleton, Manchester, M24 1FT

At your request we attended the above site to recover soil samples for test to assess Human Health Risk Assessment for the re-use of stockpiled soils and in place topsoil.

This report must be read in conjunction with Worms Eye Limited report Ref: Roundthorn Road/M24 1FT/2018, dated 17th November 2019.

The detailed assessment is attached.

Yours faithfully

for GHGCL

Neil Johnson BSc MSc CEng MIoM^3

Associate Geotechnical Engineer

Enc –

I2 Analytical Test Certificate, 19-77739 Dated 2nd December 2020

INTRODUCTION

The residential development of the former farm at the above location. The detailed Phase1 Preliminary Contaminated Land Risk Assessment and initial contaminated land assessment were undertaken by Works Eye Limited and presented in the reports.

The conclusions of the contamination assessment, Worms Eye Limited (WEL), stated.

CONCLUSION

This investigation provides useful details on ground conditions and levels of contaminants. However, further work is required to complete the investigation and fully design remedial works.

Contaminated Soils

Contamination tests mostly show levels below thresholds appropriate for the development, suggesting no risk to householders on plots 1 and 2. However, raised levels of lead and DbA in THA, and pesticides in THA and K4 at 0.3 metres suggest a risk to householders in the rear garden to plot 4, moving southwest towards plot 3. Remedial works are required to the rear (northwest) of plot 4.

The findings suggest sulphate resistant concrete is not required.

There are no risks from hydrocarbon vapours.

High specification, coated, drinking water pipes are required on the southwest leg of the site. However, the findings also suggest, subject to approval, the middle and northeast of site is suitable for the use of normal PE water pipes.

Controlled Waters

The findings suggest a very low risk to controlled waters and no further action is needed.

The sampling and testing of the current subsoil stockpiles and the in-situ topsoil has been undertaken to confirm the suitability of the soils for re-use on site.

It should be noted that the Made Ground soil from Plot3 and Plot4 identified in the WEL report have been stripped and stockpiled separately for future off site disposal.

SAMPLED SOILS

The site was visited on 12th December 2019 and four locations of soils were sampled.

Stockpile A (SP_A) – this is a stockpile of excavated sand and was located in the northern portion of the site, to the rear of Plots 3/4. A sample was taken from around the perimeter of the stockpile, homogenised and placed in to suitable sample containers. The following photographs show the materials sampled.





excavated sand soil





Note clay soils at the right side of picture are to be removed from site.

Stockpile B (SP_B). Stripped topsoil from areas including access road and Plot1 and Plot2



stockpile of stripped topsoil







Stockpile C – (SP_C) and Stockpile D (SP_D)







SP_C Topsoil sampled. In this area the topsoil is being stripped and the sand below to fill solums to current foundation construction



SP_D In this area the insitu topsoil was sampled

ASSESSMENT OF TEST RESULTS

The samples from each location were placed in to suitable containers for the tests scheduled. The samples were placed in cool box with ice-packs and collected on 13th December and delivered to I2 Analytical.

The samples were all tested for:

Suite 1: CLEA Metals, Speciated Poly Aromatic Hydrocarbons, Cyanide, Phenol, Soil Organic Matter, pH and other analytes.

Suite 2: Speciated Total Petroleum Hydrocarbons Aliphatic/Aromatic Split

Suite 3 – Total Petroleum Hydrocarbons C6-C10 and C10-C40

The full I2 Analytical Test Certificate, 19-77739 Dated 2nd December 2020, is attached.

CLEA Metals and Non Metallic Analytes

	Stockpile A 0.1-0.2m	Stockpile B 0.1-0.2m	Stockpile C 0.1-0.2m	Stockpile D 0.1-0.2m	N = value is greater than GAC Y = value is less than GAC	LQM/CIEH
Arsenic	2.9	8.4	9.6	8.9	Y	37
Barium*	13	41	40	51	Y	
Beryllium	0.21	0.44	0.41	0.50	Y	1.7
Boron (water-soluble)	< 0.2	0.2	< 0.2	0.2	Y	290
Cadmium	< 0.2	< 0.2	< 0.2	< 0.2	Y	11
Chromium VI	< 1.2	< 1.2	< 1.2	< 1.2	Y	910
Chromium III	6.0	9.9	9.1	18	Y	6
Copper	12	23	25	25	Y	2400
Lead	8.5	34	36	42	Y	200 SP1010 pC4SL
Mercury	< 0.3	< 0.3	0.4	0.3	Y	1.2
Nickel	5.5	8.1	7.0	13	Y	180
Selenium	< 1.0	< 1.0	< 1.0	< 1.0	Y	250
Vanadium	7.9	16	16	18	Y	410
Zinc	22	45	44	46	Y	3700
pH	7.7	7.0	8.2	6.9		
Phenols(Mono)	< 1.0	< 1.0	< 1.0	< 1.0	Y	550
Cyanide(Total)	< 1	< 1	< 1	< 1	Y	34 AtriskSoil
Sulphide	< 1.0	< 1.0	< 1.0	< 1.0		
SO4(Total) %	0.021	0.040	0.049	0.062		
Soil Organic Matter %	0.8	3.5	3.3	4.2		

The table above shows that none of the metallic analytes exceed the LQM/CIEH (3233)Suitable for Use Limits (S4ULs) Generic Assessment Criteria. None of the other analytes exceed the Generic Assessment Criteria.

ASSESSMENT OF TEST RESULTS

Speciated Poly Aromatic Hydrocarbons

The results of the Poly Aromatic Hydrocarbons below have been assessed using the LQM/CIEH (3233) Suitable for Use Limits (S4ULs) GAC for a Soil Organic Matter of 2.5%.

	Stockpile A 0.1-0.2m	Stockpile B 0.1-0.2m	Stockpile C 0.1-0.2m	Stockpile D 0.1-0.2m	N = value is greater than GAC Y = value is less than GAC	2.5% Soil Organic Matter LQM/CIEH
Naphthalene	< 0.05	< 0.05	< 0.05	0.31	Y	5.6
Acenaphthylene	< 0.05	< 0.05	< 0.05	< 0.05	Y	420
Acenaphthene	< 0.05	< 0.05	< 0.05	< 0.05	Y	510
Fluorene	< 0.05	< 0.05	< 0.05	< 0.05	Y	400
Phenanthrene	< 0.05	< 0.05	< 0.05	0.19	Y	220
Anthracene	< 0.05	< 0.05	< 0.05	< 0.05	Y	5400
Fluoranthene	< 0.05	< 0.05	0.32	0.28	Y	560
Pyrene	< 0.05	< 0.05	0.29	0.27	Y	1200
Benzo(a)Anthracene	< 0.05	< 0.05	0.22	0.21	Y	11
Chrysene	< 0.05	< 0.05	0.17	0.14	Y	22
Benzo(b)Fluoranthene	< 0.05	< 0.05	0.17	0.17	Y	3.3
Benzo(k)Fluoranthene	< 0.05	< 0.05	0.14	0.12	Y	93
Benzo(a)Pyrene	< 0.05	< 0.05	0.19	0.18	Y	2.7
Indeno(123-cd)Pyrene	< 0.05	< 0.05	< 0.05	< 0.05	Y	36
Dibenzo(ah)Anthracene	< 0.05	< 0.05	< 0.05	< 0.05	Y	0.28
Benzo(ghi)Perylene	< 0.05	< 0.05	< 0.05	< 0.05	Y	340
PAH(total)	< 0.80	< 0.80	1.50	1.87		

The results of the Poly Aromatic Hydrocarbons are all low and none of the speciated analytes exceed the relevant Generic Assessment Criteria.

ASSESSMENT OF TEST RESULTS

Speciated Total Petroleum Hydrocarbons Aliphatic/Aromatic Split

The results of the Speciated Total Petroleum Hydrocarbons and Benzene Toluene Ethylbenzene and Xylene (BTEX) have been assessed using the LQM/CIEH (3233)Suitable for Use Limits (S4ULs) Generic Assessment Criteria with an Soil Organic Matter of 2.5%.

	Stockpile A 0.1-0.2m	Stockpile B 0.1-0.2m	Stockpile C 0.1-0.2m	Stockpile D 0.1-0.2m	N = value is greater than GAC Y = value is less than GAC	2.5% Soil Organic Matter LQM/CIEH
Benzene	< 1.0	< 1.0	< 1.0	< 1.0	Y	0.17
Toluene	< 1.0	< 1.0	< 1.0	< 1.0	Y	290
Ethylbenzene	< 1.0	< 1.0	< 1.0	< 1.0	Y	110
p & m-xylene	< 1.0	< 1.0	< 1.0	< 1.0	Y	140
						130
o-xylene	< 1.0	< 1.0	< 1.0	< 1.0	Y	140
MTBE (Methyl Tertiary Butyl Ether)	< 1.0	< 1.0	< 1.0	< 1.0		
Aliphatic >EC5 - EC6	< 0.001	< 0.001	< 0.001	< 0.001	Y	78
Aliphatic >EC6 - EC8	< 0.001	< 0.001	< 0.001	< 0.001	Y	230
Aliphatic >EC8 - EC10	< 0.001	< 0.001	< 0.001	< 0.001	Y	65
Aliphatic >EC10 - EC12	< 1.0	< 1.0	< 1.0	< 1.0	Y	330
Aliphatic >EC12 - EC16	< 2.0	< 2.0	< 2.0	< 2.0	Y	2400
Aliphatic >EC16 - EC21	< 8.0	< 8.0	< 8.0	< 8.0	Y	C16-C35 92000
Aliphatic >EC21 - EC35	< 8.0	< 8.0	< 8.0	< 8.0	Y	
Aromatic >EC5 - EC7	< 0.001	< 0.001	< 0.001	< 0.001	Y	140
Aromatic >EC7 - EC8	< 0.001	< 0.001	< 0.001	< 0.001	Y	290
Aromatic >EC8 - EC10	< 0.001	< 0.001	< 0.001	< 0.001	Y	83
Aromatic >EC10 - EC12	< 1.0	< 1.0	< 1.0	< 1.0	Y	180
Aromatic >EC12 - EC16	< 2.0	< 2.0	< 2.0	< 2.0	Y	330
Aromatic >EC16 - EC21	< 10	< 10	< 10	< 10	Y	540
Aromatic >EC21 - EC35	< 10	< 10	< 10	< 10	Y	1500
Aliphatic (EC5 - EC35)	< 10	< 10	< 10	< 10		
Aromatic (EC5 - EC35)	< 10	< 10	< 10	< 10		
Petroleum Range Organics (C6 - C10)	< 0.1	< 0.1	< 0.1	< 0.1		
TPH C10 - C40	< 10	< 10	< 10	< 10		
TPH (C35 - C40)	< 10	< 10	< 10	< 10		

It can be seen that all of the result are very low, all less than the Laboratory Level of Detection.

CONCLUSION

The results of the tests have shown that the soils in the stockpiles and topsoil in-situ will pose no risk to Human Health for reuse as subsoil or topsoil in the soft landscaping of the residential development.

As noted above there were soils identified as contaminated in the areas of Plot4 and the Made Ground in Plot4 toward Plot 3 have been stripped and separately stockpiled for off-site disposal. The transfer of waste tickets showing mass of soil and destination must be retained and reported in the Validation Report.

As noted above the areas of the rear gardens to Plot3 and Plot4 will require a Simple Engineered Cover System where there remains Made Ground with the potential to be contaminated as indicated in the Worm Eye Limited Report.

We would recommend that, at the time duration the construction sequence, the areas of the rear gardens / soft landscaping in the areas of Plot3 and Plot4 should be visually inspected for any Made Ground with the potential for soil contamination. If necessary additional tests should be undertaken.

The Simple Engineered Cover System as described in BRE “Cover systems for land regeneration” would normally comprise a total consolidated thickness of 600mm comprising: 450mm of validated sub-soil and 150mm of validated topsoil with the construction confirmed. The tests above show that the as dug sand and the topsoil will be suitable for re-use.

Neil Johnson
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i2 Analytical Ltd.
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Analytical Report Number : 19-77739

Project / Site name:	Ramsden Farm	**Samples received on:**	
Your job number:	19-1126	**Samples instructed on:**	13/12/2019
Your order number:		**Analysis completed by:**	02/01/2020
Report Issue Number:	1	**Report issued on:**	02/01/2020
Samples Analysed:	4 soil samples		

Signed:

Zina Abdul Razzak
Senior Quality Specialist

For & on behalf of i2 Analytical Ltd.

Standard Geotechnical, Asbestos and Chemical Testing Laboratory located at: ul. Pionierów 39, 41 -711 Ruda Śląska, Poland.

Accredited tests are defined within the report, opinions and interpretations expressed herein are outside the scope of accreditation.

Standard sample disposal times, unless otherwise agreed with the laboratory, are :

soils	- 4 weeks from reporting
leachates	- 2 weeks from reporting
waters	- 2 weeks from reporting
asbestos	- 6 months from reporting

Excel copies of reports are only valid when accompanied by this PDF certificate.

Any assessments of compliance with specifications are based on actual analytical results with no contribution from uncertainty of measurement. Application of uncertainty of measurement would provide a range within which the true result lies. An estimate of measurement uncertainty can be provided on request.

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The results included within the report are representative of the samples submitted for analysis.

Analytical Report Number: 19-77739

Project / Site name: Ramsden Farm

Lab Sample Number				1393577	1393578	1393579	1393580	
Sample Reference				SP_A	SP_B	SP_C	SP_D	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.10-0.20	0.10-0.20	0.10-0.20	0.10-0.20	
Date Sampled				12/12/2019	12/12/2019	12/12/2019	12/12/2019	
Time Taken				1200	1150	1215	1120	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Stone Content	%	0.1	NONE	< 0.1	< 0.1	< 0.1	< 0.1	
Moisture Content	%	N/A	NONE	11	18	15	22	
Total mass of sample received	kg	0.001	NONE	1.2	1.1	0.99	1.0	
General Inorganics								
pH - Automated	pH Units	N/A	MCERTS	7.7	7.0	8.2	6.9	
Total Cyanide	mg/kg	1	MCERTS	< 1	< 1	< 1	< 1	
Total Sulphate as SO_4	%	0.005	MCERTS	0.021	0.040	0.049	0.062	
Sulphide	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Organic Matter	%	0.1	MCERTS	0.8	3.5	3.3	4.2	
Total Phenols								
Total Phenols (monohydric)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Speciated PAHs								
Naphthalene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.31	
Acenaphthylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Acenaphthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Fluorene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Phenanthrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	0.19	
Anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.32	0.28	
Pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.29	0.27	
Benzo(a)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.22	0.21	
Chrysene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.17	0.14	
Benzo(b)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.17	0.17	
Benzo(k)fluoranthene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.14	0.12	
Benzo(a)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	0.19	0.18	
Indeno(1,2,3-cd)pyrene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Dibenz(a,h)anthracene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Benzo(ghi)perylene	mg/kg	0.05	MCERTS	< 0.05	< 0.05	< 0.05	< 0.05	
Total PAH								
Speciated Total EPA-16 PAHs	mg/kg	0.8	MCERTS	< 0.80	< 0.80	1.50	1.87	
Heavy Metals / Metalloids								
Arsenic (aqua regia extractable)	mg/kg	1	MCERTS	2.9	8.4	9.6	8.9	
Barium (aqua regia extractable)	mg/kg	1	MCERTS	13	41	40	51	
Beryllium (aqua regia extractable)	mg/kg	0.06	MCERTS	0.21	0.44	0.41	0.50	
Boron (water soluble)	mg/kg	0.2	MCERTS	< 0.2	0.2	< 0.2	0.2	
Cadmium (aqua regia extractable)	mg/kg	0.2	MCERTS	< 0.2	< 0.2	< 0.2	< 0.2	
Chromium (hexavalent)	mg/kg	1.2	MCERTS	< 1.2	< 1.2	< 1.2	< 1.2	
Chromium (aqua regia extractable)	mg/kg	1	MCERTS	6.0	9.9	9.1	18	
Copper (aqua regia extractable)	mg/kg	1	MCERTS	12	23	25	25	
Lead (aqua regia extractable)	mg/kg	1	MCERTS	8.5	34	36	42	
Mercury (aqua regia extractable)	mg/kg	0.3	MCERTS	< 0.3	< 0.3	0.4	0.3	
Nickel (aqua regia extractable)	mg/kg	1	MCERTS	5.5	8.1	7.0	13	
Selenium (aqua regia extractable)	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Vanadium (aqua regia extractable)	mg/kg	1	MCERTS	7.9	16	16	18	
Zinc (aqua regia extractable)	mg/kg	1	MCERTS	22	45	44	46	

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Analytical Report Number: 19-77739

Project / Site name: Ramsden Farm

Lab Sample Number				1393577	1393578	1393579	1393580	
Sample Reference				SP_A	SP_B	SP_C	SP_D	
Sample Number				None Supplied	None Supplied	None Supplied	None Supplied	
Depth (m)				0.10-0.20	0.10-0.20	0.10-0.20	0.10-0.20	
Date Sampled				12/12/2019	12/12/2019	12/12/2019	12/12/2019	
Time Taken				1200	1150	1215	1120	
Analytical Parameter (Soil Analysis)	**Units**	**Limit of detection**	**Accreditation Status**					
Monoaromatics & Oxygenates								
Benzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Toluene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Ethylbenzene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
p & m-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
o-xylene	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
MTBE (Methyl Tertiary Butyl Ether)	µg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
Petroleum Hydrocarbons								
Petroleum Range Organics (C6 - C10)	mg/kg	0.1	MCERTS	< 0.1	< 0.1	< 0.1	< 0.1	
TPH C10 - C40	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	
TPH-CWG - Aliphatic >EC5 - EC6	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC6 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aliphatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aliphatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	
TPH-CWG - Aliphatic >EC16 - EC21	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	
TPH-CWG - Aliphatic >EC21 - EC35	mg/kg	8	MCERTS	< 8.0	< 8.0	< 8.0	< 8.0	
TPH-CWG - Aliphatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >EC5 - EC7	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC7 - EC8	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC8 - EC10	mg/kg	0.001	MCERTS	< 0.001	< 0.001	< 0.001	< 0.001	
TPH-CWG - Aromatic >EC10 - EC12	mg/kg	1	MCERTS	< 1.0	< 1.0	< 1.0	< 1.0	
TPH-CWG - Aromatic >EC12 - EC16	mg/kg	2	MCERTS	< 2.0	< 2.0	< 2.0	< 2.0	
TPH-CWG - Aromatic >EC16 - EC21	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic >EC21 - EC35	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	
TPH-CWG - Aromatic (EC5 - EC35)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	
TPH (C35 - C40)	mg/kg	10	MCERTS	< 10	< 10	< 10	< 10	

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Analytical Report Number : 19-77739

Project / Site name: Ramsden Farm

* These descriptions are only intended to act as a cross check if sample identities are questioned. The major constituent of the sample is intended to act with respect to MCERTS validation. The laboratory is accredited for sand, clay and loam (MCERTS) soil types. Data for unaccredited types of solid should be interpreted with care.

Stone content of a sample is calculated as the % weight of the stones not passing a 10 mm sieve. Results are not corrected for stone content.

Lab Sample Number	Sample Reference	Sample Number	Depth (m)	Sample Description *
1393577	SP_A	None Supplied	0.10-0.20	Brown loam and sand with gravel.
1393578	SP_B	None Supplied	0.10-0.20	Brown loam and clay with gravel and vegetation.
1393579	SP_C	None Supplied	0.10-0.20	Brown loam and clay with gravel and vegetation.
1393580	SP_D	None Supplied	0.10-0.20	Brown loam and clay with gravel and vegetation.

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Analytical Report Number : 19-77739

Project / Site name: Ramsden Farm

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status
Boron, water soluble, in soil	Determination of water soluble boron in soil by hot water extract followed by ICP-OES.	In-house method based on Second Site Properties version 3	L038-PL	D	MCERTS
BTEX and MTBE in soil (Monoaromatics)	Determination of BTEX in soil by headspace GC-MS.	In-house method based on USEPA8260	L073B-PL	W	MCERTS
Hexavalent chromium in soil (Lower Level)	Determination of hexavalent chromium in soil by extraction in water then by acidification, addition of 1,5 diphenylcarbazide followed by colorimetry.	In-house method	L080-PL	W	MCERTS
Metals in soil by ICP-OES	Determination of metals in soil by aqua-regia digestion followed by ICP-OES.	In-house method based on MEWAM 2006 Methods for the Determination of Metals in Soil.	L038-PL	D	MCERTS
Moisture Content	Moisture content, determined gravimetrically. (30 oC)	In-house method based on BS1377 Part 2, 1990, Classification tests	L019-UK/PL	W	NONE
Monohydric phenols in soil	Determination of phenols in soil by extraction with sodium hydroxide followed by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (skalar)	L080-PL	W	MCERTS
Organic matter (Automated) in soil	Determination of organic matter in soil by oxidising with potassium dichromate followed by titration with iron (II) sulphate.	BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L009-PL	D	MCERTS
pH in soil (automated)	Determination of pH in soil by addition of water followed by automated electrometric measurement.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests	L099-PL	D	MCERTS
PRO (Soil)	Determination of hydrocarbons C6-C10 by headspace GC-MS.	In-house method based on USEPA8260	L088-PL	W	MCERTS
Speciated EPA-16 PAHs in soil	Determination of PAH compounds in soil by extraction in dichloromethane and hexane followed by GC-MS with the use of surrogate and internal standards.	In-house method based on USEPA 8270	L064-PL	D	MCERTS
Stones content of soil	Standard preparation for all samples unless otherwise detailed. Gravimetric determination of stone > 10 mm as % dry weight.	In-house method based on British Standard Methods and MCERTS requirements.	L019-UK/PL	D	NONE
Sulphide in soil	Determination of sulphide in soil by acidification and heating to liberate hydrogen sulphide, trapped in an alkaline solution then assayed by ion selective electrode.	In-house method	L010-PL	D	MCERTS
Total cyanide in soil	Determination of total cyanide by distillation followed by colorimetry.	In-house method based on Examination of Water and Wastewater 20th Edition: Clesceri, Greenberg & Eaton (Skalar)	L080-PL	W	MCERTS
Total Sulphate in soil as %	Determination of total sulphate in soil by extraction with 10% HCl followed by ICP-OES.	In-house method based on BS1377 Part 3, 1990, Chemical and Electrochemical Tests""	L038-PL	D	MCERTS
TPH Banding in Soil by FID	Determination of hexane extractable hydrocarbons in soil by GC-FID.	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	W	MCERTS
TPH in (Soil)	Determination of TPH bands by HS-GC-MS/GC-FID	In-house method, TPH with carbon banding and silica gel split/cleanup.	L076-PL	D	NONE
TPHCWG (Soil)	Determination of hexane extractable hydrocarbons in soil by GC-MS/GC-FID.	In-house method with silica gel split/clean up.	L088/76-PL	W	MCERTS

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Analytical Report Number : 19-77739

Project / Site name: Ramsden Farm

Water matrix abbreviations: Surface Water (SW) Potable Water (PW) Ground Water (GW) Process Water (PrW)

Analytical Test Name	Analytical Method Description	Analytical Method Reference	Method number	Wet / Dry Analysis	Accreditation Status

For method numbers ending in 'UK' analysis have been carried out in our laboratory in the United Kingdom.
For method numbers ending in 'PL' analysis have been carried out in our laboratory in Poland.
Soil analytical results are expressed on a dry weight basis. Where analysis is carried out on as-received the results obtained are multiplied by a moisture correction factor that is determined gravimetrically using the moisture content which is carried out at a maximum of 30oC.

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Company Registration: 12046415 VAT Number: 344807589

SRM Utilities
7 Belhill Gardens
Salford
M6 7LX

Date: 04th February 21
Ref: SRM854/05

To whom it may concern,

We can confirm that the water pipes installed to plots 3 and 4 of Ramsden Farm, Roundthorn Road, Middleton, M24 1FT were to the standard as per the approved design issued at the time of installation. The pipe installed was 25mm Protectaline Barrier Pipe and it terminated in the utility room of both properties.

Should you require any further assistance, please give me a call on 0161 872 0597.

Thank you in advance

Yours Faithfully,

David Walsh
Operations Director

WIAPS
WATER INDUSTRY APPROVED PLUMBERS' SCHEME

CERTIFICATE OF COMPLIANCE

WIAPS
WATER INDUSTRY APPROVED PLUMBERS' SCHEME

White copy: Customer **Blue copy:** Water Company **Green copy:** retain for records

NEW SUPPLY Yes [✓] No [ ] Internal [ ] External [✓]

Water Company Application/Reference Number: U/U

Member's Name: M DAVIES

Membership No: GW4182

Company Name: SRM UTILITIES

Membership Expiry Date: 5/21

Telephone Number: 07763 299 877

Email address:

Address where work carried out (please include plot numbers where applicable):

RAMSDEN FARM
ROUNDTHORN RD
MIDDLETON, M24 1FT

Plot No:	Plot No:	Plot No:	Plot No:	Plot No:	Plot No:
3	4				

Name and address of the person who commissioned the work (the customer):

M DAVIES
7 BELLHILL GARDENS
SALFORD, M6 7LX

Telephone Number:

Email address:

Please give a brief description of the work completed and its location within the premises:

25mm PE LAID FROM RIGHT SIDE OF BOUNDARY STRAIGHT UP THE GARDEN INTO THE UTILITY ROOM. CAPPED OFF BOTH ENDS.

I confirm that the work carried out complies with the Water Supply (Water Fittings) Regulations 1999, Water Supply (Water Fittings) (Scotland) Byelaws 2014 or Water Supply (Water Fittings) Regulations (Northern Ireland) 2009.

Signed:

Date: 1/9/20

Print: M DAVIES

Certificate No: P 347924

E3P
Taylor Road
Urmston
Manchester
M41 7JQ

Manchester | London | Edinburgh

info@E3P.co.uk
www.E3P.co.uk

GAS MEMBRANE VALIDATION

Site: Ramsden Farm	
Date: 20-03-2020	**Project Number: 14-034**
Project Manager: S. Ellis	**E3P Engineer: R. Webster**
PM Qualifications: BSc (Hons), FGS	**Engineer Qualifications: Verification of Gas Protection Systems Dec 17**
Ground Gas Risk Assessment: Characteristic Situation 2 / Amber 1	

Overview:

The membrane comprised a Visqueen low permeability gas membrane (Yellow) resistant to radon, carbon dioxide and low levels of methane. E3P can confirm there were no holes or rips at the time of inspection. Upon being laid the membrane is to be covered with a Celotex (closed Cell) floor insulation material which is considered to provide a high degree of protection.

All external joints were inspected and E3P can confirm that the membrane was overlapped and double taped to external and internal gas resistant DPM. The membrane was taped to the gas resistant DPM using a double-sided jointing tape. All the overlaps were then additionally taped using foil backed girth tape.

Each unit has a service duct located to the front and outer edge of the property. E3P inspected each one and can confirm that the top-hats have been adequately sealed against the membrane.

Based on the information provided within this report, the site inspections and validation checklists, E3P can confirm that **Plots 3-4** have been installed with gas protection measures in accordance with Characteristic Situation 2 / Amber 1 to an acceptable level of workmanship.

Membrane Specification: Visqueen Gas Membrane (Yellow)



Plot - 3	
General Condition of Membrane-Good Condition	
	
Verification of Joints and Seals-Good Condition	
	
Verification of Service Penetrations-Good Condition	
	

Plot - 4
General Condition of Membrane-Good Condition
 
Verification of Joints and Seals-Good Condition
 
Verification of Service Penetrations-Good Condition
 

e3p

Gas Protection Validation Site Record

Plot No: Ramsden farm plot 3

Inspection date/time:	20/3	Inspected by:	R Webster	Photographed:	✓/× ✓

	✓/×	Notes/recommendations
Membrane Type Correct	✓	
Extent of Coverage Correct	✓	
Underside of Membrane	✓	
Slab / membrane condition	✓	
Laps and joints	✓	
Damp-proof course	✓	
Service entries	✓	
Folded Membrane Joint Taped & inspected	✓	

This Plot has PASSED/FAILED* inspection. (Any proposed remedial works will be noted in the "Remarks" column on this form).

An additional inspection visit IS/IS NOT* required for this Plot.

Inspection by: R Webster Signed: .....

e3p

Gas Protection Validation Site Record

Plot No: Ramsden farm plot 4

Inspection date/time:	20/3	Inspected by:	R Webster	Photographed:	✓/× ✓

	✓/×	Notes/recommendations
Membrane Type Correct	✓	
Extent of Coverage Correct	✓	
Underside of Membrane	✓	
Slab / membrane condition	✓	
Laps and joints	✓	
Damp-proof course	✓	
Service entries	✓	
Folded Membrane Joint Taped & inspected	✓	

This Plot has (PASSED)/FAILED* inspection. (Any proposed remedial works will be noted in the "Remarks" column on this form).

An additional inspection visit IS/(IS NOT)* required for this Plot.

Inspection by: R Webster Signed: .....

RAMSDEN FARM, ROUNDTHORN ROAD, MIDDLETON, MANCHESTER, M24 1FT
General Photographs
1/3/21





RAMSDEN FARM, ROUNDTHORN ROAD, MIDDLETON, MANCHESTER, M24 1FT
Plot 1
1/3/21









RAMSDEN FARM, ROUNDTHORN ROAD, MIDDLETON, MANCHESTER, M24 1FT
Plot 2
1/3/21









RAMSDEN FARM, ROUNDTHORN ROAD, MIDDLETON, MANCHESTER, M24 1FT
Plot 3
1/3/21









RAMSDEN FARM, ROUNDTHORN ROAD, MIDDLETON, MANCHESTER, M24 1FT
Plot 4
1/3/21







